



Another one bites the dust

On the Need for Durable Stormwater Facilities

By Diane Cameron

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Photo credit: fosc.org. The above photos show the bioretention unit with its research-monitoring components at the Dennis Ave Health Center. Construction was completed in March of 2006. The photo on the left shows the triangular-shaped bioretention unit just after planting was completed, and the rock-filled slope by which parking lot runoff entered the unit. The photo on the right shows the concrete flume (an open-channel flow metering device). Next to the concrete flume was the box housing the monitoring equipment.

Healthy living requires clean water to drink, clean air to breathe, and healthy soil. Just as personal health depends upon developing good habits and sticking to them, community health depends upon building long-lasting green infrastructure solutions that contribute to clean drinking water, healthy local streams and reduction in Chesapeake Bay pollutants - and sticking with them. Green stormwater solutions include street trees, parkland forests, and residential rain gardens. Maintaining clean water means maintaining and sometimes retrofitting stormwater facilities over the decades.

Clean water advocates highlighted the need for durable stormwater facilities in a recent letter to Lynn Buhl, Assistant Secretary of the Maryland Department of the Environment (MDE) co-signed by Conservation Montgomery.

At right: The Dennis Avenue Health Center reforestation project on Sept. 11, 2017 Photo: Diane Cameron

Through the Stormwater Partners Network, ably led by Chair Caitlin Wall of Potomac Conservancy, and Vice Chair Eliza Cava of Audubon Naturalist Society, we are supporting a new proposed approach for Montgomery County and other large urban

jurisdictions' stormwater permits. This new approach includes six principles aimed at guiding MDE's revision of its stormwater permit template. And it proposes watershed restoration requirements highlighting green infrastructure and accountability for meeting pollution reduction targets aimed at attaining Water Quality Standards under the federal Clean Water Act.

Proposed guiding principles for the Maryland Stormwater Permits listed in the letter to MDE include: durability; restoring both local waterways and the Chesapeake Bay; reducing stormwater volume; using the treatment train approach; promoting innovation; and providing structure, versatility and flexibility.



*At left: One of three new bioretention units in the same area where the former research bioretention unit was located. A reforestation project is also located in the same area.
Photo: Diane Cameron*

Durability is often overlooked in stormwater management programs. For example, a well-known bioretention unit located at the County Dennis Avenue Health Center lasted only about eight or nine years (from 2006 until about 2015), until redevelopment managers removed it. This unit was designed as an environmental engineering research facility by Dr. Allen Davis of the University of Maryland. As a stormwater facility, this unit contributed to restoring Sligo Creek and the Anacostia River. As a research facility, [data that Dr. Davis and his students compiled](#) contributed to our understanding of the performance of bioretention systems - accelerating watershed restoration efforts around the world.



Above: View from one of the new bioretention units, looking west to the new building.
Photo: Diane Cameron

A few years ago, this bioretention unit bit the dust, destroyed during construction of a new health center. This means that we will lack the data that this bioretention unit could have yielded over time as its plant and soil communities matured and evolved. Although the new health center's stormwater plan includes a green roof and bioswales, the reasons for the removal of the pre-existing stormwater unit (which was located at the site's lowest spot, and had appeared to be in good working condition) were not provided in [the planning documents for this project](#). The need to inform DEP and DPS about the removal of this research facility (a.k.a. "monitoring station") was stated in the stormwater plan approval letter to the project's Landscape Architect from the Department of Permitting Services:

Please work with DEP concerning the removal of the existing biofilters and the monitoring station. Keep us informed with any decisions or agreements made between DGS and DEP concerning these structures. The removal of the structures and reuse of materials, including the monitoring station, must be noted in the sequence of construction.

(April 19, 2012 letter from Rick Brush of DPS to Geoff Campbell, RLA of ADTEK Engineers, Inc.)

For more about this facility, see the blog post and photo series by Ed Murtagh for Friends of Sligo Creek on the FOSC web site at: <http://fosc.org/SWMap5.htm>.

See also: http://www.water.rutgers.edu/Rain_Gardens/RainGardenSymp/2_davisNJ052908.pdf and <http://wcdpa.com/wp-content/uploads/Watershed-Restoration-Monitoring-in-Montgomery-County.pdf> (for the latter presentation, see esp. slides #14 and 15).

[http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)EE.1943-7870.0000026](http://ascelibrary.org/doi/abs/10.1061/(ASCE)EE.1943-7870.0000026) (abstract for another paper analyzing data from the Dennis Ave. Health Center bioretention facility).

Given the intensive efforts devoted to the creation, planting, and maintenance of stormwater facilities, the capital investment, and the crucial role these facilities serve, it is essential that these facilities serve out their design life (which can be 30 to 50 years - or longer). Legally-enforceable Conservation Easements, and other legal protections, are needed to help ensure durability. We need to protect and maintain our park woods, rain gardens, bioretention units, and other clean water facilities in perpetuity.